

G. HIPWOOD.
 COMBINED BUFFER AND FENDER.
 APPLICATION FILED OCT. 7, 1909.

967,380.

Patented Aug. 16, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

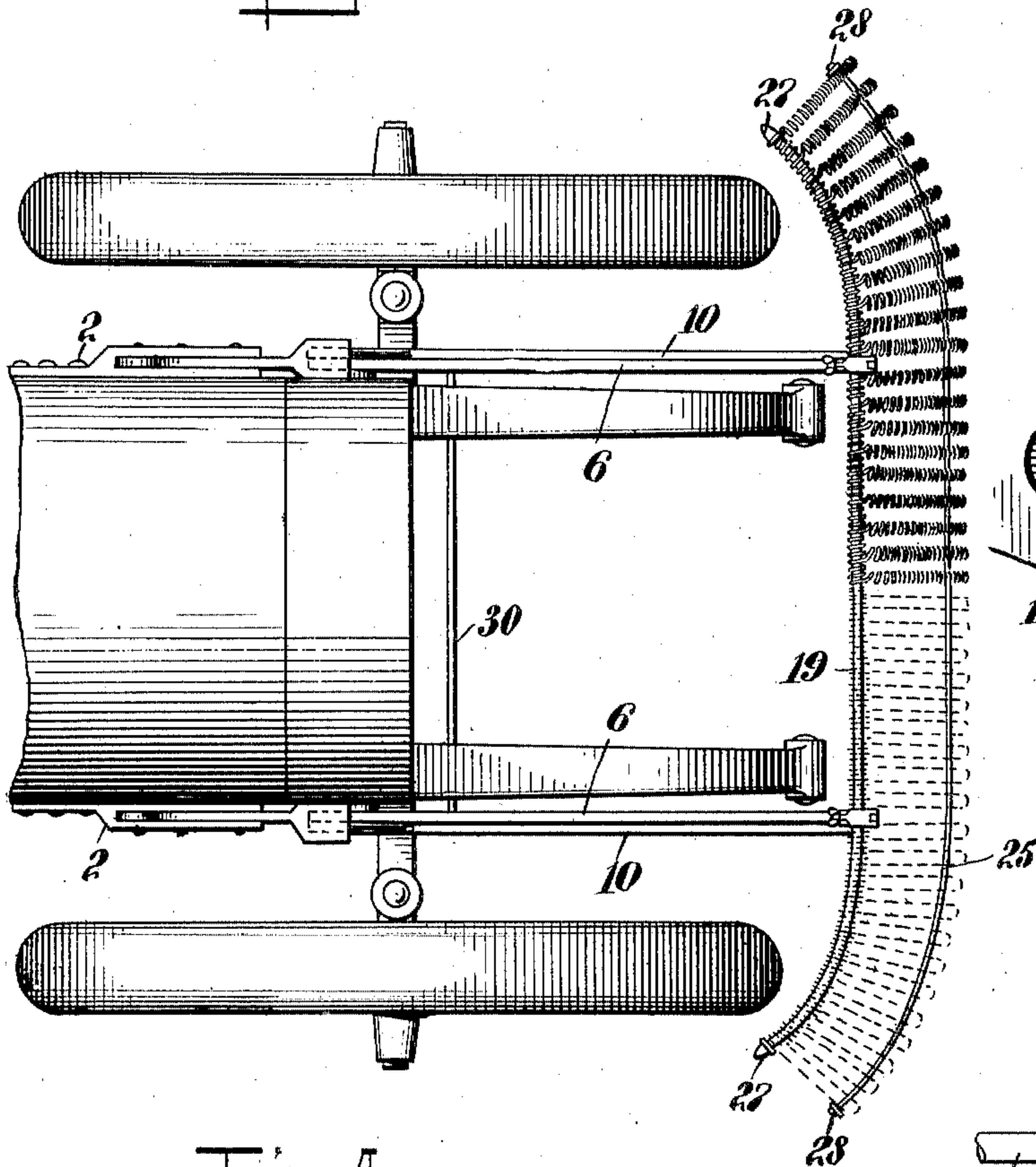


Fig. 6.

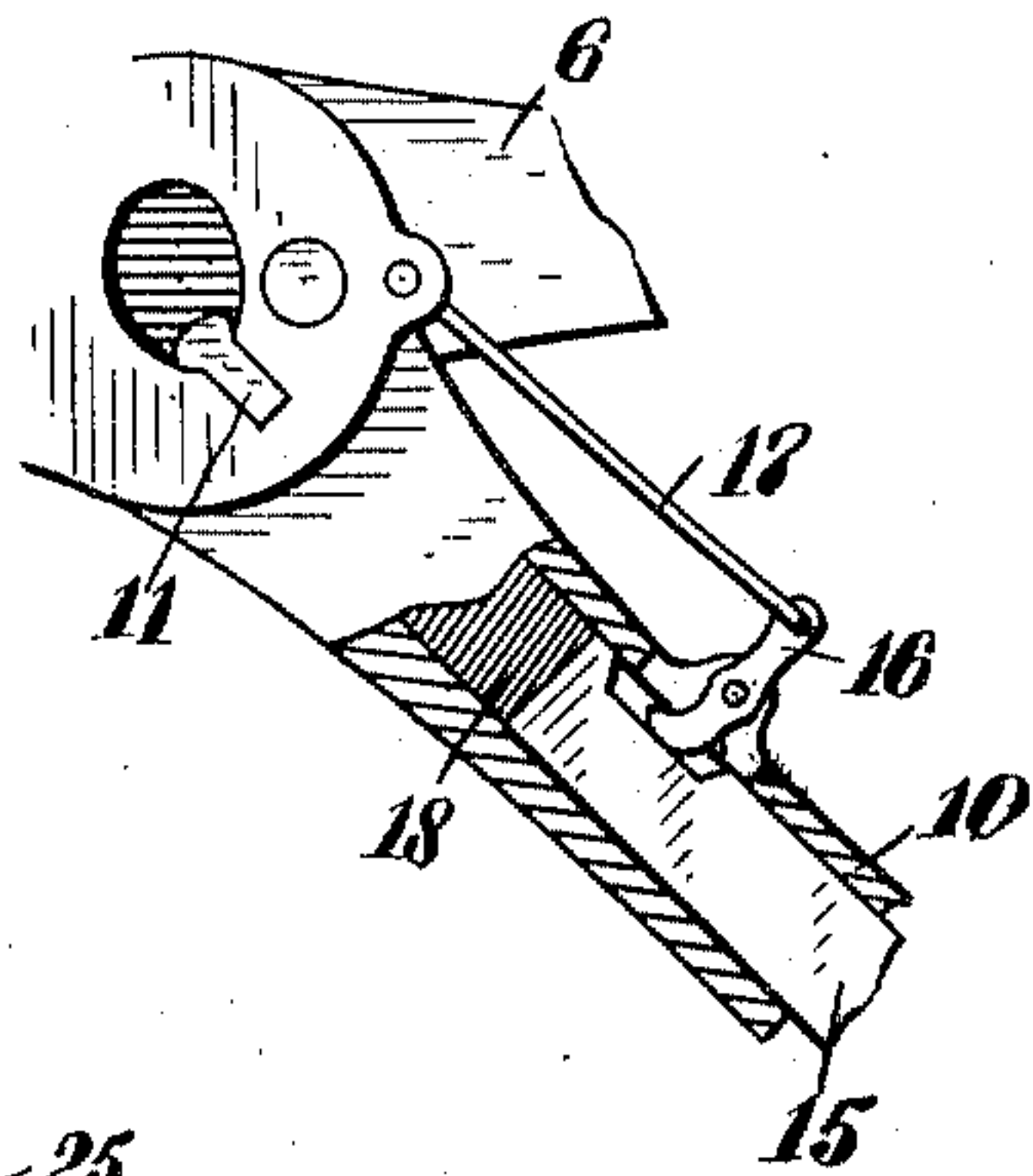


Fig. 5.

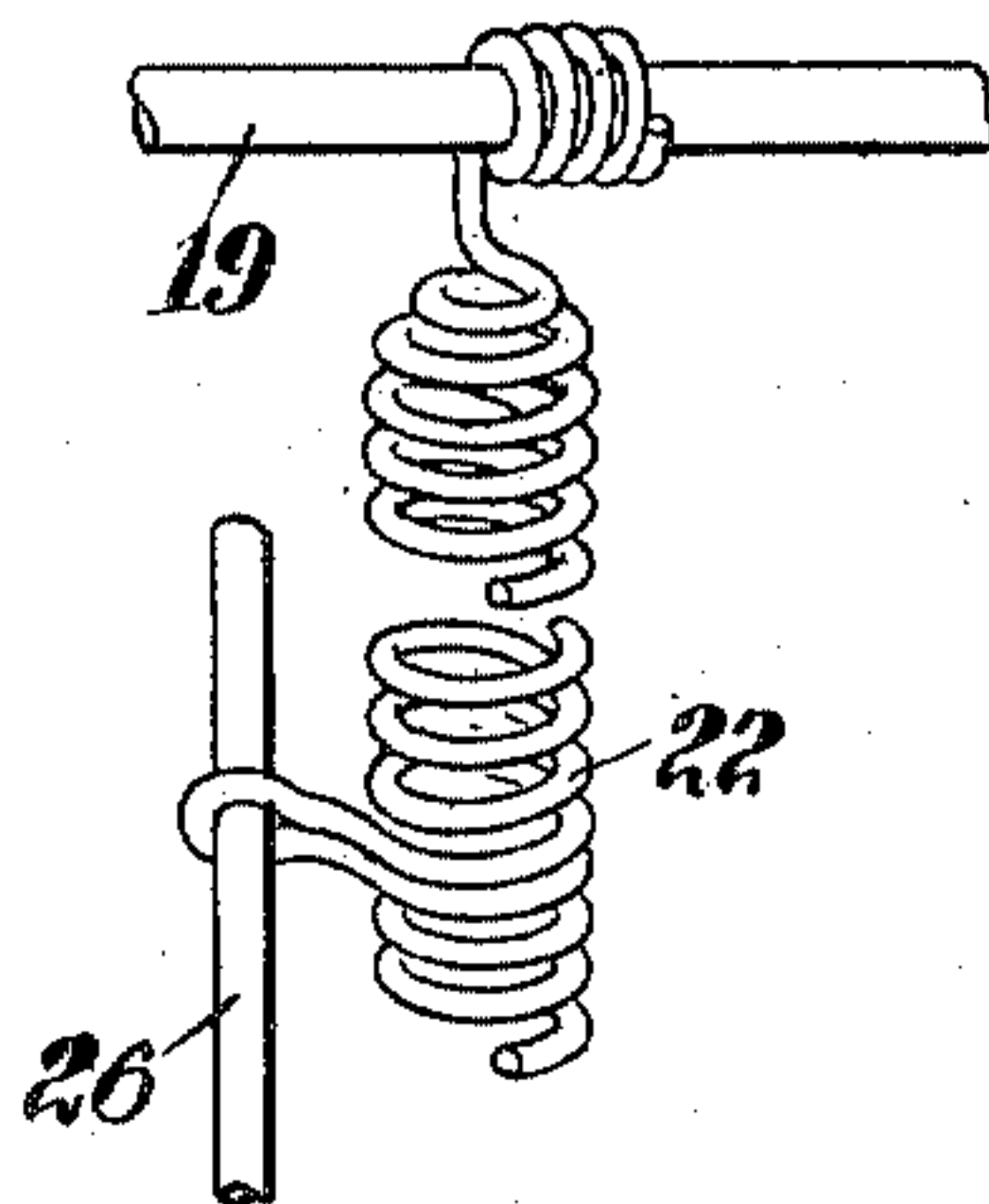


Fig. 4.

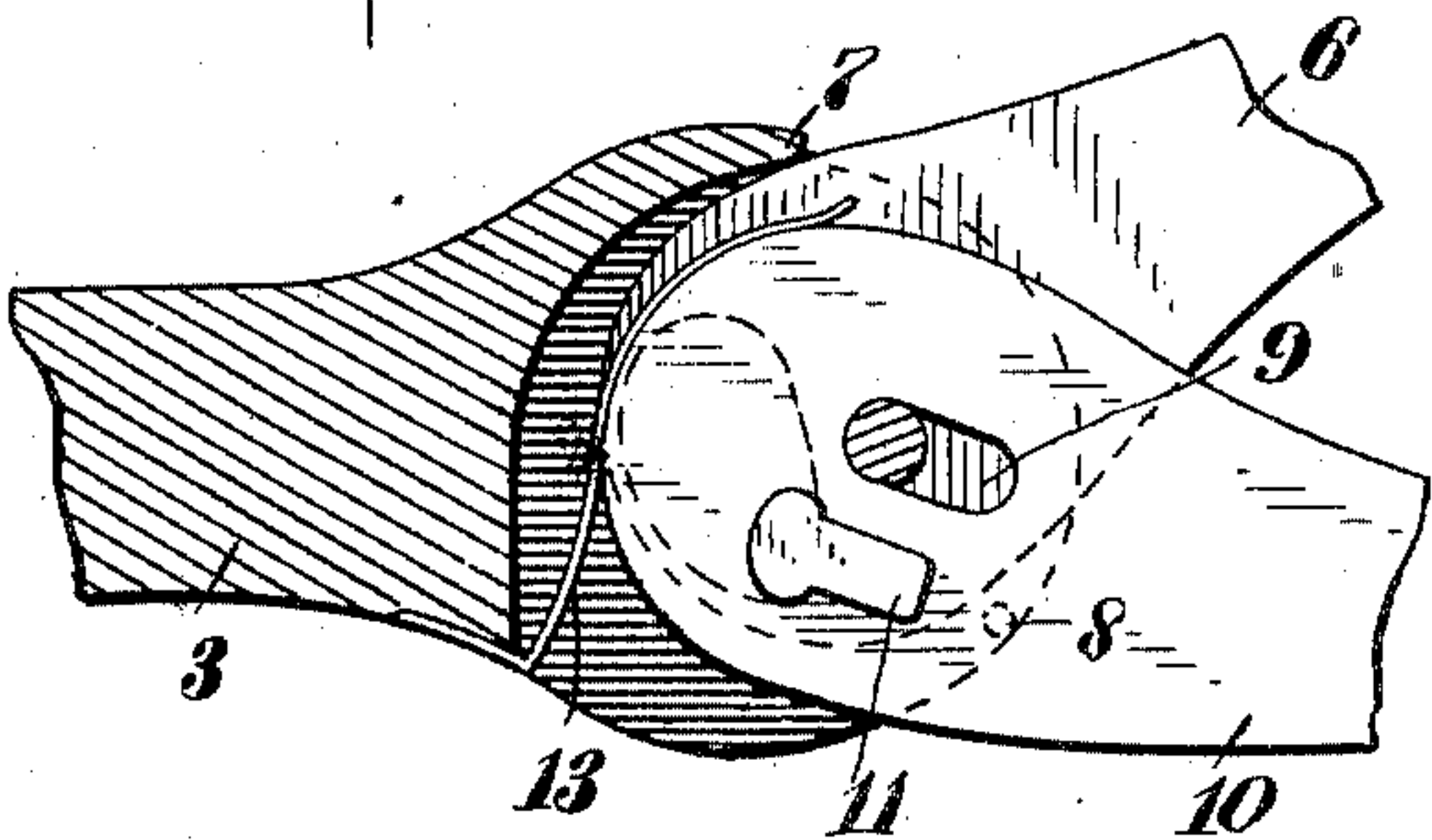
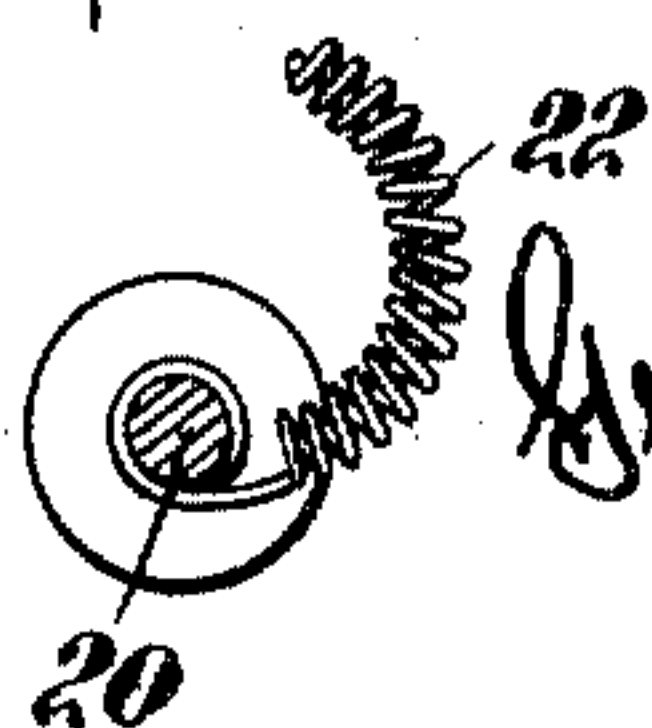


Fig. 7.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

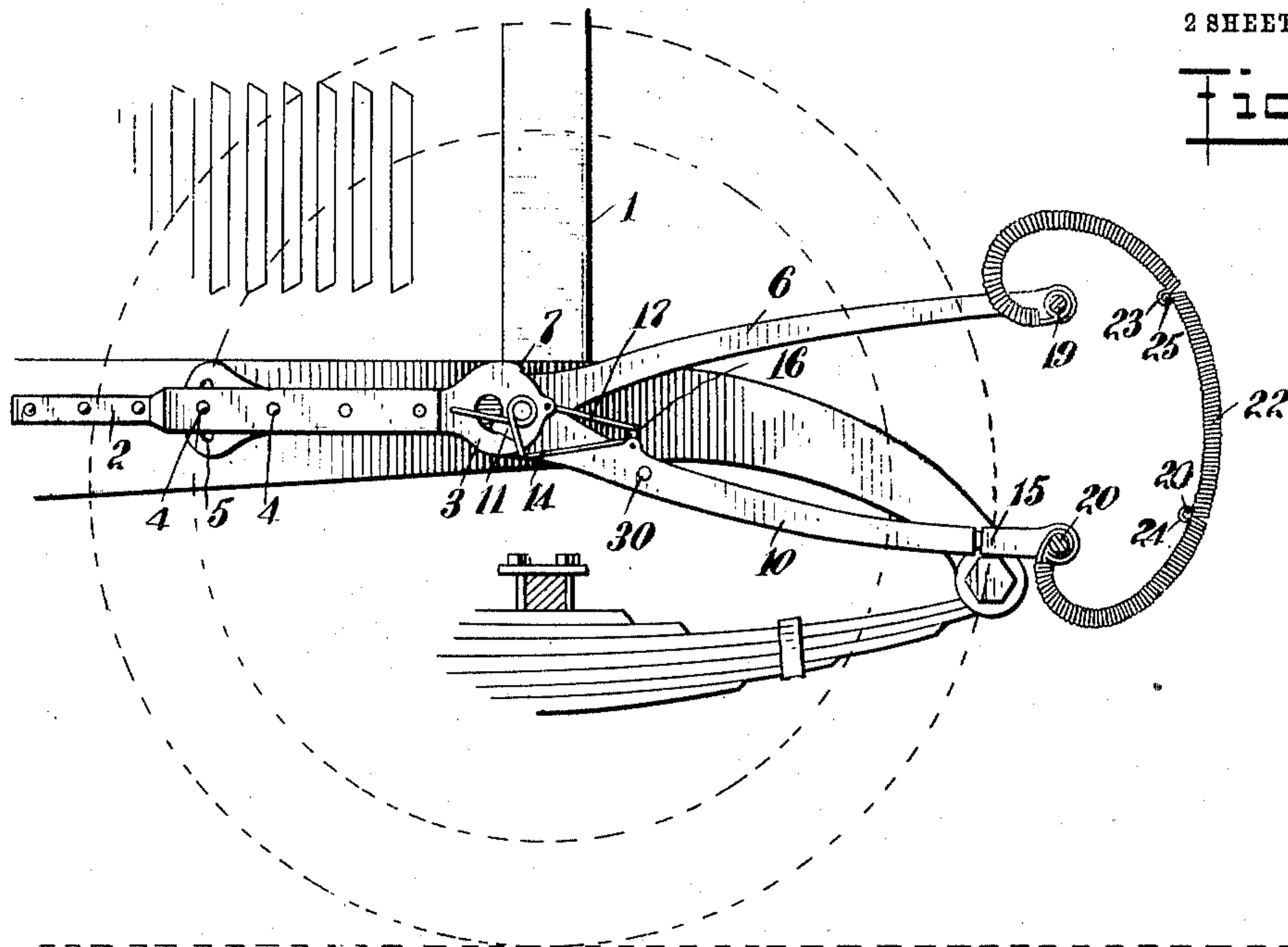
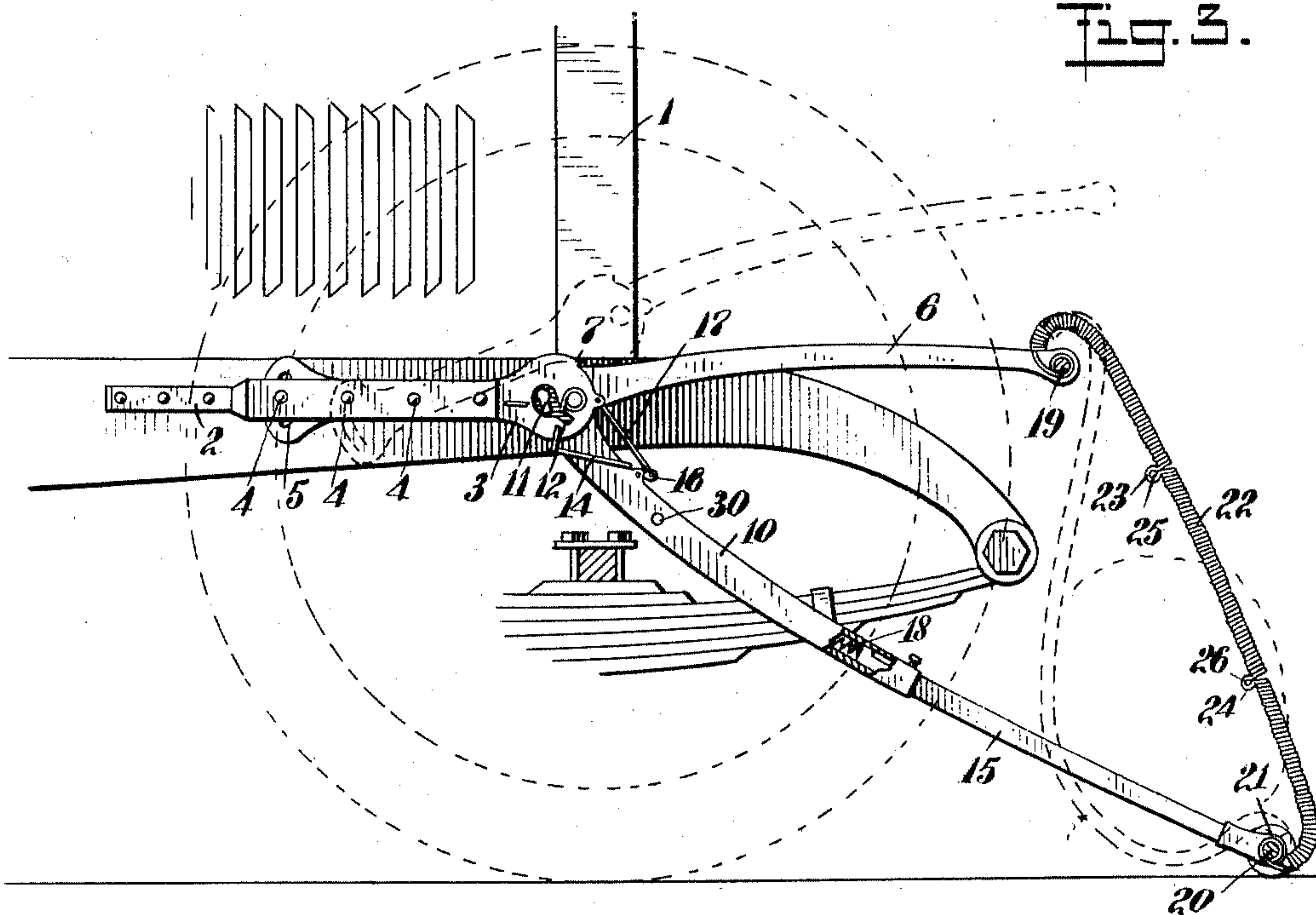


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE HIPWOOD, OF NEW YORK, N. Y.

COMBINED BUFFER AND FENDER.

967,380.

Specification of Letters Patent.

Patented Aug. 16, 1910.

Application filed October 7, 1909. Serial No. 521,442.

To all whom it may concern:

Be it known that I, GEORGE HIPWOOD, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Combined Buffer and Fender, of which the following is a full, clear, and exact description.

10 The invention relates to a combined buffer and fender to be used on any vehicle propelled by motive power.

15 An object of this invention is to provide a device which will give a soft, yielding resistance to a person or object struck, and tend to shunt the obstacle off to one side beyond the reach of the vehicle wheels.

20 A further object of the invention is to provide means whereby, in case a direct collision with an obstacle occurs, the device will automatically transform itself from a buffer into a fender or cradle, which will scoop up the obstacle immediately, or in case of a throw, as soon as the machine overtakes the obstacle.

25 A further object of this invention resides in the manner that the structure is attached to a vehicle and combined or disposed with relation to the parts of the vehicle.

30 A still further object of this invention is to provide a device which will be simple in construction, inexpensive to manufacture, strong and durable, and also quick and yielding positive in its action.

35 These and further objects, together with the construction and combination of parts will be more fully described hereinafter.

40 Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which

45 Figure 1 is a plan view showing my device attached to a motor vehicle; Fig. 2 is a side view in elevation showing the device in the form of a buffer; Fig. 3 is a side view in elevation showing the device with the lower arms extended and dropped to form a cradle of the buffer springs, and also showing in dotted lines the adjusted position of the support and the position which the springs would occupy when engaged by an obstacle; Fig. 4 is an enlarged vertical section showing the details of connection of the arms with the support; Fig. 5 is an enlarged perspective view showing the manner in which

the spiral springs are wound and their connection with the main rod and connecting rod; Fig. 6 is an enlarged fragmentary view in elevation, showing in section the manner of locking the extension and the lower arm; and Fig. 7 is a detail sectional view in elevation showing the manner of connecting the spiral springs to the transverse rod.

These drawings illustrate one form of structure embodying my invention, while it will be understood that various changes in detail of construction and modification are within the scope of my invention.

The particular form shown I will now describe.

Referring more particularly to the separate parts of the device, 1 indicates the vehicle to which my device is attached. This vehicle is preferably provided with brackets 2 on each side thereof, which are secured thereto in any well-known manner. The brackets 2 are fork-shaped at their front ends to provide a groove in which a support 3 is adapted to be secured. The support 3 may be adjustably secured to the bracket 2 by means of suitable bolts 4 which pass through a number of perforations in the support. Aside from this longitudinal adjustment there is also provided a pivotal adjustment. This is allowed for by means of a slot 5 which is provided in the rear end of the support 3 and is adapted to be engaged by any of the bolts 4 to secure it to the bracket in any adjusted angular relation.

90 Suitably connected to the outer end of each of the supports 3 there are provided upper arms 6 which have a limited pivotal motion relative to the support 3, the upper limit of this motion being the back 7 of the bifurcation in the support 3 between the forks of which the arm 6 is pivoted. The lower limit of the pivotal motion of the arm 6 consists of a stud 8 shown in dotted lines in Fig. 4, which is adapted to engage the lower edge of the arm 6. Slidingly pivoted to the pivot of each of the arms 6 by means of a slot 9 formed therein, there are provided arms 10. In order to lock the arms 10 in their uppermost position, they are each provided with a key-shaped lock 11 which is adapted to engage with its angular portion, an angular slot 12 in the outer fork of the bifurcated end of the support 3. The slot 12 extends rearwardly into a large cavity so that when the arm 10 is pushed rearwardly, the lock 11 will have room to revolve on the support

3. In order to hold the arm 10 in its forward position and thus hold the lock 11 in engagement with the slot 12 there is provided a spring 13 which is secured in any well-known manner to the support 3 and engages the back end of the arm 10. In order to throw the arm 10 downwardly when the lock 11 has been withdrawn from the slot 12 there is provided a spring 14 which is secured at one end in any well-known manner to the support 3 and coiled about the pivot point of the arms 6 and 10, and then engages the upper side of the arm 10.

Each of the lower arms 10 is extensible and consists of a hollow, tubular upper portion into which telescopes a lower member 15. The lower member 15 is locked into its uppermost position by means of a latch 16 which is pivotally secured in any well-known manner to the arm 10 and pivotally connected to the support 3 by means of a rod 17. The connection of the latch 16 to the support 3 is of such a nature that when the arm 10 is forced inwardly as by contact with an obstacle, so that the lock 11 disengages from the groove 12, the latch 16 will be automatically removed from engagement with the extension member 15, thereby permitting it to fall into its extended position. The extension of the arm 10 is aided by means of a coil spring 18 which is compressed back of the end of the extension member 15 and is adapted to shoot the extension member 15 downwardly and outwardly as soon as the latch 16 is released.

The upper arms 6 are connected together by means of a transverse member 19 which may be of any suitable form and material, such as an iron rod or tube, which is curved rearwardly and bent to form guards for the wheels of the vehicle. The extension members 15 of the arms 10 are also connected together by a similar transverse member 20 which is also provided with suitable rollers 21 for the purpose of affording a rolling support when the extension members 15 occupy their lower position. The members 19 and 20 are connected together by means of a plurality of spiral springs 22 which are pivotally secured at each end to the members 19 and 20. In order to space the springs 22 one from the other, the wire which is used in forming them is extended and coiled around the members 19 and 20 for several turns, so that the end of the wire abuts against the adjacent spring. The springs 22 are coiled in a peculiar manner, that is they are first coiled right-handed and then left-handed, and then again right-handed, and at the junction between the right and left-handed coils there are formed loops 23 and 24 which form suitable means of securing the connecting rods or wires 25 and 26 which extend back of all the springs. By

this means, if one spring is forced backward by an obstacle all of the springs will necessarily move in sympathy to a greater or lesser extent. In order to prevent the springs 22 from slipping off the curved ends of the members, 19, 20, 25 and 26 these members are provided with buttons 27 and 28 which may be of any suitable form and are secured to the members in any suitable manner.

In order that the arms 10 may act together and both unlock and swing down simultaneously they are connected together by means of a bar 30 which is secured to them in any well-known manner.

When the members 19 and 20 are locked in their normal position as indicated in Fig. 2, the spiral springs form a buffer which bellies out in front of these members to form a resilient yet positive cushion. When the buffer formed by the spiral springs comes in contact with an obstacle, the springs will not only yield backwardly but will squirm and pivot around the rods 19 and 20 forming a positive yet yielding resistance to the obstacle struck. Further, if the obstacle comes in contact with one or more of the spiral springs 22, all these springs, by reason of the connecting wires 25 and 26, will necessarily move in sympathy to a greater or less extent. Moreover, sufficient force will be transmitted from the springs to the extensions 15 on the lower arms 10 to force the locks 11 out of engagement with the slots 12, thus simultaneously releasing the latch 16 so that the extension members 15 will spring out simultaneously with the snap-down action of the arms 10. When this has occurred, the spiral springs 22 will form a yielding pick-up cradle or fender which will immediately scoop up the obstacle and prevent it from falling under the wheels of the vehicle. If, however, the obstacle is hit a glancing blow, the curved nature of the members 19 and 20 are also of the buffer springs will shunt the obstacle off to one side, out of the path of the vehicle.

It will be noted that in the construction shown, the length of the arms 6 and 10 permit the attachment of the bracket 2 and the support 3 against the side of the frame of the automobile, in a place where in the present construction of automobiles there is invariably suitable space for the attachment of such parts. In addition the place at which it is attached is a most substantial portion of the vehicle proper, thereby affording a better support than is the case with previous suggestions in connection with the applications of other forms of buffers. Besides these advantages the arrangement also permits the lower arm to drop without interference with other parts of the vehicle. Furthermore, being inside of the wheel these

arms are protected from injury by the lateral impact of any object. At the same time the relation of frame, wheels and arms results in supporting the buffer and fender sufficiently near the center to give rigidity, and at the same time properly support the laterally extending and rearwardly curved ends. This arrangement as a whole locates all the parts in relation to the vehicle in such a way as to reduce to the minimum any projection or protrusion beyond the ordinary limits of an automobile, leaving solely the contacting buffer portion in advance of the other parts of the vehicle.

While I have shown and described a form of structure embodying my invention, I may emphasize the details or arrangement in various ways without departing from my invention, and therefore do not intend to be limited to this particular structure, but

That which I claim and desire to secure by Letters Patent is:

1. A buffer, comprising members extending directly transversely intermediate their ends and curved rearwardly at their ends, separately movable spiral springs, having vertically arranged axes, connecting said members, and wires intermediate said members and connecting said springs.

2. A buffer, comprising transverse members, spiral springs connecting said members, and continuations of said springs forming spacing members between said springs.

3. A buffer, comprising transverse members, and a plurality of spiral springs pivotally secured to said members in spaced relation.

4. A buffer, comprising transverse members, and a plurality of spiral springs pivotally secured to said members at their ends and bellying outwardly from said members.

5. A buffer, comprising transverse members, a plurality of spiral springs pivotally secured to said members at their ends and bellying outwardly from said members, and means for connecting said springs intermediate their ends.

6. A buffer, comprising transverse members, a plurality of spiral springs pivotally connected to said members, said springs being spirally wound in both right-handed and left-handed directions, and connecting wires joining said springs at the junction of the right and left-hand winds.

7. A buffer, comprising transverse members, a plurality of spiral springs secured to said members, loops in said springs intermediate their ends, and means for joining said loops together.

8. A buffer, comprising transverse members, a plurality of spiral springs connected to said members, each of said spiral springs being wound in both right and left-handed

directions and having a loop formed at the junction of the right and left-hand winds, and means for connecting said loops together.

9. A buffer, comprising transverse members, a plurality of spiral springs pivotally connected to said members at their ends and bellying outwardly from said members and also having their ends wound around said rods to form spacing members, each of said springs having a plurality of winds in right and left-hand directions, and having loops formed therein at the junction of said winds, and wires inserted in said loops connecting said springs together.

10. In a device of the class described, the combination with a support, of a buffer, and means operated by contact with an obstacle for extending the lower end of said buffer forwardly to automatically transform said buffer into a pick-up cradle.

11. In a device of the class described, the combination with a support, of a plurality of arms connected to said support, a resilient member connected to said arms and bellying out to form a buffer, and means operated by contact with an obstacle for automatically extending some of said arms to form said resilient member into a pick-up cradle.

12. In a device of the class described, the combination with a support, of a plurality of arms connected to said support, a resilient member connected to said arms and bellying out to form a buffer, and means operated by contact with an obstacle for automatically dropping some of said arms to form said resilient member into a pick-up cradle.

13. In a device of the class described, the combination with a support, of a plurality of arms connected to said support, a resilient member connected to said arms and bellying out to form a buffer, and means operated by contact with an obstacle for automatically dropping and extending some of said arms to form said resilient member into a pick-up cradle.

14. In a device of the class described, the combination with a support, of a plurality of arms connected to said support, transverse members connected to said arms, a resilient member connected to said arms and bellying out to form a buffer, and means operated by contact with an obstacle, adapted to automatically transform said resilient member into a pick up cradle.

15. In a device of the class described, the combination with a support, of a plurality of arms connected to said support, transverse members connecting said arms, spiral springs pivotally connected to said arms and bellying out to form a buffer, and means operated by the contact of said spiral

springs with an obstacle, adapted to automatically transform said spiral springs into a pick-up cradle.

16. In a device of the class described, the combination with a support, of a plurality of arms connected to said support, transverse members connecting said arms, some of said arms being extensible, a plurality of spiral springs pivotally connected to said transverse members and bellying therefrom, means for locking said extensible arms, and means operated by contact with an obstacle for unlocking said last-mentioned means.

17. In a device of the class described, the combination with a support, of a plurality of arms connected to said support, transverse members connecting said arms in pairs, a plurality of spiral springs pivotally connected to said members, and a lock for holding a pair of said arms so as to retain said springs bellying from said transverse members, said lock being adapted to release said arms automatically when said springs encounter an obstacle, to form said springs into a pick-up cradle.

18. In a device of the class described, the combination with a vehicle, of a support adjustably connected to said vehicle, arms connected to said support, transverse members connecting said arms in pairs, and spiral springs pivotally connected to said members and bellying therefrom.

19. In a device of the class described, the combination with a support, of a pair of arms pivoted to said support, a pair of arms slidably pivoted to said support, means for locking said last-mentioned arms against pivotal motion, means for yieldingly holding said last-mentioned arms in locking engagement, transverse members connecting said pairs of arms, and spiral springs connected to said members.

20. In a device of the class described, the combination with a support, of a bellying buffer curved at its ends and composed of spirally wound springs having their axes extending in vertical planes and connected to said support.

21. In a device of the class described, the combination with an adjustable support, of a bellying buffer curved at its ends and composed of spirally wound springs connected to said supports.

22. In a device of the class described, the combination with a support, of a bellying buffer curved at its ends and composed of spirally wound springs connected to said supports, and means for automatically transforming said buffer into a resilient pick-up cradle.

23. In a device of the class described, the combination with a support, of a plurality of arms connected to said support, trans-

verse members connecting said arms, some of said arms being extensible, a plurality of spiral springs pivotally connected to said transverse members and bellying therefrom, spring means for lengthening said extensible arms, and a lock securing said arms in a telescoped condition.

24. In a device of the class described, the combination with a support, of a plurality of arms connected to said support, transverse members connecting said arms, some of said arms having extension members, a plurality of spiral springs pivotally connected to said transverse members and bellying therefrom, means for locking said extension members in said arms, spring means for extending said extension members, and means operated by the longitudinal movement of said arms, adapted to release said extension members.

25. In combination with a wheeled vehicle, a body frame between the forward wheels, buffer arms projecting longitudinally of the vehicle between the frame and the wheels, supports for said buffer arms on the frame laterally opposite said wheels, a buffer, a transverse top member of said buffer attached to said arms, a transverse lower buffer member attached to a second set of arms and means for dropping said second set of arms pivotally about their support.

26. In combination with an automobile, of sills for said automobile, brackets attached to said sills, supports pivotally adjustable on said sills, arms pivotally connected to said supports, and a buffer connected to said arms.

27. In combination with an automobile, of sills for said automobile, brackets attached to said sills, supports pivotally and longitudinally adjustable on said sills, arms connected to said supports, and a buffer connected to said arms.

28. In combination with a vehicle, of a buffer bellying therefrom, and means for transforming said buffer into a cradle by diminishing the belly of said buffer.

29. In combination with a vehicle, of a buffer for said vehicle having a reversible belly.

30. In a device of the class described, the combination with a support, of a buffer, and means operated by contact with an obstacle, adapted to automatically transform said buffer into a pick-up cradle.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE HIPWOOD.

Witnesses:

HORATIO WHITING,
PHILIP D. ROLLHAUS.